

IN THE CLAIMS:

Please amend the claims as shown below.

1. (Currently Amended) A device for detecting a target substance in a fluid, comprising

a periodic structure having a vacant portion for passing a fluid containing the target substance and a solid portion capable of transmitting an electromagnetic wave arranged regularly to form a periodic distribution of a refractive index for the electromagnetic wave,

an electromagnetic wave-projecting means for projecting the electromagnetic wave to the periodic structure, and

a detecting means for detecting a change in position with respect to the electromagnetic wave emitted from the periodic structure,

wherein the quantity of the target substance is calculated based on the change in position.

2. (Original) The device according claim 1, wherein a trapping substance capable of bonding selectively to the target substance is disposed on the surface of the solid portion, and a change in the periodic distribution of the refractive index caused by bonding the target substance to the trapping substance is detected.

3. (Original) The device according to claim 1, wherein the periodic

structure forbids transmission of the electromagnetic wave in a specific wavelength band depending on the periodic distribution of the refractive index.

4. (Cancelled)

5. (Original) The device according to claim 3, wherein the periodic structure has a defect in the regular arrangement of the vacant portion and the solid portion to provide an electromagnetic wave-transmissive wavelength range in the wavelength band where the electromagnetic wave propagation is forbidden, the electromagnetic wave-projecting means projects the electromagnetic wave in the electromagnetic wave-transmissive wavelength range to the periodic structure, and the detecting means measures the electromagnetic wave of the electromagnetic wave-transmissive wavelength range emitted from the periodic structure.

6. (Original) The device according to claim 1, wherein the device has additionally a temperature-controlling means for controlling the temperature of the periodic structure.

7. (Original) The device according to claim 1, wherein the device has additionally a polarization-controlling means for controlling polarization of the electromagnetic wave.

8. (Original) The device according to claim 1, wherein the electromagnetic wave projected to the periodic structure has a continuous wavelength component, and the detecting means measures the spectrum of the electromagnetic wave emitted from the periodic structure.

9. (Previously Presented) The device according to claim 1, wherein the electromagnetic wave is projected through a collimating means onto the periodic structure.

10. (Original) The device according to claim 1, wherein the device has additionally a first aligning means for aligning the electromagnetic wave emitted from the electromagnetic wave-projecting means to enter the periodic structure at a prescribed position at a prescribed angle, and a second aligning means for aligning the electromagnetic wave to reach the detecting means.

11. (Original) The device according to claim 1, wherein the solid portions of the structure are columnar, and the vacant portion is an interstice among the structure.

12. (Original) The device according to claim 1, wherein the solid portion is a continuous body and the vacant portion is constituted of holes penetrating the continuous body.

13 to 31. (Cancelled)

32. (Previously Presented) The device according to claim 1, wherein the detecting means is a two-division sensor.

33. (Previously Presented) The device according to claim 1, wherein an emission face of the periodic structure is circular.